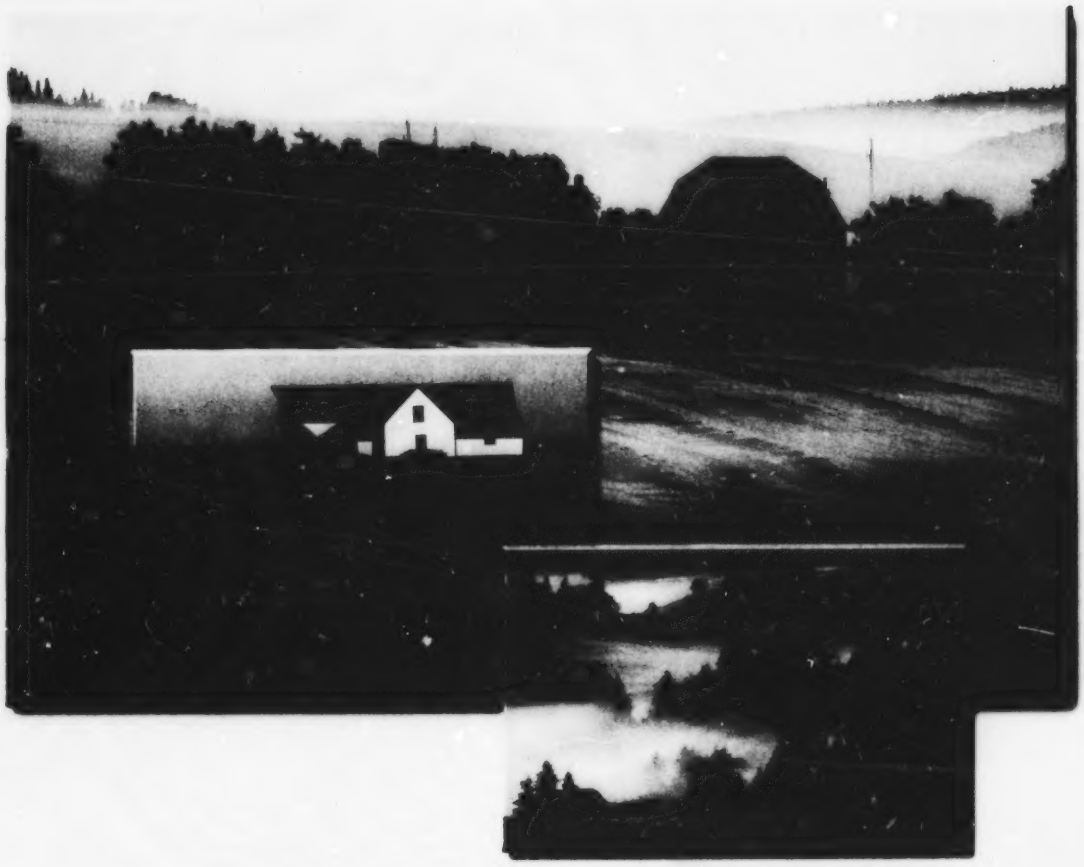
Prince Edward Island
CANADA

Agriculture Research
Investment Fund Inc.



Annual Report 2000~2001

Established by the
Prince Edward Island
Department of Agriculture and Forestry

102-04617/

Hon. Mitchell Murphy, Minister
P.E.I. Department of Agriculture and Forestry

To the Honourable Leonce Bernard
Lieutenant Governor of Prince Edward Island

Sir:

I have the honour to submit herewith the 2000 Annual Report of the Prince Edward Island Agricultural Research Investment Fund Inc.

I have the honour to be, Sir
Your obedient servant,

Mitch Murphy

Hon. Mitch Murphy, Minister
Agriculture and Forestry

Alan Miller, Chairperson
Agricultural Research Investment Fund Inc.

The Honourable Mitch Murphy
Minister of Agriculture and Forestry
P.O. Box 2000
Charlottetown, P.E.I., C1A 7N8

Honourable Sir:

In accordance with the Prince Edward Island Agricultural Research Investment Fund Inc. Bylaws, I enclose the report of the Corporation for the fiscal year ended March 31, 2001.

This report also includes the Corporation's audited financial statements for this period.

Respectively submitted,

Alan Miller, Chairperson
Agricultural Research Investment Fund Inc.

BOARD OF DIRECTORS

Alan Miller..... Chairperson

Tim Ogilvie.....Vice-Chairperson

Joanne Driscoll.....Treasurer

Dannie MacKinnon.....Member

Rory Francis/Paul Jelley.....Member

Christiane Deslauriers.....Member

Gary Linkletter.....Member

ADMINISTRATION

Juanita Diamond.....Program Officer

Barb Poirier.....Recording Secretary

CHAIRMAN'S REPORT

I am pleased to submit the annual report highlighting the activities of the Prince Edward Island Agricultural Research Investment Fund Inc. for the 2000-2001 fiscal year.

The Corporation was managed by a seven-member Board of Directors representing government, research agencies and industry. Interest and activity in the Fund continued to be relatively strong during the past year requiring the Board to meet a total of 5 times.

Seventeen proposals were reviewed by the Board with three being rejected during the year. The majority of projects were from industry associations and organizations, with some having collaboration with educational institutions and multiple funding partners. The 14 proposals accepted and initiated were for an ARIF commitment of $804,710.

Project subject areas were diverse including studies relating to plant health, increasing industry competitiveness of the swine industry through a Research Chair, improvements in product quality and standards, improved production and management practices leading to enhanced land stewardship and/or sustainability of resources, and improved crop production through the use of cultivars and technology.

The Corporation's 2000/2001 fiscal expenditure for approved projects was $644,011.

APPROVED PROJECTS 2000/2001

Effects of Sustainable Systems on Horticultural Crop Production

Applicant(s):	Prince Edward Island Horticultural Association
Project Term:	3 years
Project Cost:	$187,380
Maximum ARIF Contribution:	$140,490

Through a strategic planning process, the Prince Edward Island Horticultural Association identified priority areas such as crop management conservation and sustainable farm practices. This industry is preparing to move to a production system with increased emphasis on sustainable practices.

Producers realize the effects of reduced tillage operations as to its effect on soil erosion. However, the effects as to the crop's response yield and quality have not been investigated. This three-year project will investigate and evaluate the production of the major vegetable crops in response to reduced tillage. This evaluation will also aim to maintain yield, quality and consistency. Crops studied will include carrots, broccoli, lettuce, cauliflower, cabbage, parsnips and onions.

Evaluation and Selection of Breeding Lines of Double Cut Red Clover for Wide Range of Flowering Dates

Applicant(s):	PEI Dairy Producers Association and The Norwegian Crop Research Institute
Project Term:	2 years
Project Cost:	$75,250
Maximum ARIF Contribution:	$30,000

Red Clover is a legume species commonly used as a livestock forage species in Atlantic Canada. Having red clover cultivars with broad adaptations would provide producers with expanded choices depending upon soil type, production system, environment and production goals.

This two-year project will evaluate elite red clover (*Trifolium pratense* L.) strains for adaptability to P.E.I. conditions and evaluate flowering dates/maturity, forage yield improvement and the development of cultivars with broad adaptation to diverse harvesting management systems.

This is a collaborative project utilizing cultivars selected by the Norwegian Crop Research Institute.

Seed Production of Grasses - 1 Year Extension

Applicant:	Canadian Seed Growers Association Maritime Branch
Project Term:	1 year
Project Cost:	$40,000
Maximum ARIF Contribution:	$24,000

Production of grass seed is a potential diversification relatively unexplored in P.E.I. Private industry has identified this sector as one which might provide economic activity and support sustainable cash crop production in the region. Such crops may be suitable rotation crops with potatoes.

Little information is known on the seed production potential of grasses such as perennial and Italian ryegrasses and tall fescue. This project will aid in identifying high yielding varieties of ryegrass and production technology suitable under local conditions. Seed yields, seeding dates and seeding methods will be evaluated.

Development and Testing of Methods for Reducing the Milkhouse Wastewater from Dairy Farms

Applicant:	Prince Edward Island Dairy Producers Association
Project Term:	2 years
Project Cost:	$223,300
Maximum ARIF Contribution:	$45,120

Reducing wastewater on dairy farms has been identified by the industry as an area of high priority for research. Dairy farms are intensive users of water. Wastewater contains residual milk and cleaning chemicals which pose a serious environmental threat to water and are significant costs to producers for storage and treatment.

The objective of this project is to determine the engineering and economic feasibility of various pipeline cleaning management strategies for reducing the amount of wastewater produced and chemicals used.

Research will be carried out in a novel working model wash system at the Nova Scotia Agricultural College Biological Environmental Engineering Centre facility. The project will provide important information on alternatives that dairy producers can choose to reduce their wastewater.

Potatoes in Finishing Rations for Cattle

Applicant:	PEI Cattlemen's Association and Hub Meat Packers
Project Term:	1 ½ years
Project Cost:	$120,000
Maximum ARIF Contribution:	$ 60,000

Very little information is available on the effect of feeding potatoes on carcass and meat quality of beef cattle. New initiatives are under way in order to deliver a premium quality product to consumers. The decision to feed cattle potatoes in a ration may affect this quality.

This project will determine the relationship between the level of potatoes in the ration and meat quality, carcass quality and intake and performance, as well as the determination of potato inclusion levels. This study will include on-farm feedlot studies.

An Investigation of Factors Associated with Milk Off-Flavor in PEI Dairy Herds

Applicant:	Prince Edward Island Dairy Producers Association
Project Term:	1 ½ years
Project Cost:	$50,500
Maximum ARIF Contribution:	$24,050

The incidence of off-flavor on PEI has been increasing in the last two years. The problem is of major importance for producers, dairy personnel and processors. While there appear to be seasonal patterns, causal factors are not readily identified.

This study is a pilot project in which the data available on off-flavor problems during the past two years will be reviewed. For the remainder of the season, new cases of off-flavor will be investigated and used to identify hypotheses for a long-term study. The project will be conducted by a team including a nutritionist, a milking technologist and a veterinarian.

2000 Post Harvest Laboratory Test In-Field Follow Up

Applicant:	Prince Edward Island Potato Board
Project Term:	6 months
Project Cost:	$14,295
Maximum ARIF Contribution:	$ 9,000

Over the past three years, significant work has taken place in order to develop a post-harvest laboratory virus test which can be used to provide information on the quality of the crop prior to planting. This test has now become mandatory for all seedlots intended for planting on Prince Edward Island.

Field evaluations during 1999 demonstrated that the test was very accurate for Potato Virus Y but revealed discrepancies for Potato Leafroll Virus. Testing protocol changes were implemented during the 1999 post-harvest test. Representative fields planted from these seed lots will be assessed for virus levels and compared to the 1999/2000 laboratory readings to determine the accuracy of the test and its reliability in predicting levels of PVY and PLRV.

Geographic Origin of Potatoes

Applicant:	Prince Edward Island Potato Board
Project Term:	2 years
Project Cost:	$314,300
Maximum ARIF Contribution:	$120,000

Prince Edward Island is seen as the leader in fresh potato sales in Canada. Consumers recognize the label "PEI Potatoes", and purchase these potatoes with the understanding that the Island's long-standing reputation for quality will give them satisfactory results. When they purchase a bag of potatoes with poor quality inside, they are obviously dissatisfied. This translates into loss of reputation for PEI potatoes, and sales suffer in the long term.

In recent years, increased problems with "counterfeit" PEI potatoes have arisen in major markets. While product inside bags labelled as PEI potatoes appears to be of non-PEI origin, no method was available to conclusively prove this. Recent research has shown that levels of trace metals may be used to provide the necessary differentiation.

This project will involve the collection and analysis of potatoes from different geographic origins. A database will be built to contain the results, which can then be used to determine whether or not suspect potatoes are of PEI origin. The completion of this project will result in a tool which the Prince Edward Island potato industry can use to combat misuse of the PEI logo and brand.

A Proposal to Advance Swine Research on Prince Edward Island - Years 2 and 3

Applicant:	Prince Edward Island Hog Commodity Marketing Board
Project Term:	2 years
Project Cost:	$160,000
Maximum ARIF Contribution:	$120,000

The Prince Edward Island Swine industry recognizes that research is a key element which will help the industry improve its competitiveness in the future.

This research will continue to focus on production of pork for alternative and niche markets that will increase the value of PEI pigs, reduce the risk of pig disease causing production losses and loss of markets and reduce the cost of production through more efficient feeds and feeding methods. The project is a collaboration between the swine industry and the University of Prince Edward Island through the establishment of a researcher/faculty position (50%) and a technical support person.

Rapid seed potato vine destruction

Applicant:	Prince Edward Island Tissue Culture Association
Project Term:	1 ½ years
Project Cost:	$27,400
Maximum ARIF Contribution:	$20,550

The potato industry in Prince Edward Island has undergone changes in the past ten years. These changes have made the production of quality seed difficult as a result of increased virus pressure. Seed growers are implementing management changes such as green sprouting, aphid monitoring, early planting and early topkill as methods of reducing exposure of seed lots to aphids. All these management techniques will reduce the number of days foliage is exposed to contamination from the virus vectors.

Recent adaptations to vine destruction equipment can greatly influence the seed potato production and possibly reduce the applications of foliar desiccants used for vine destruction. In order to evaluate one of these methods, members of the PEI Tissue Culture Association will conduct field plot research evaluating a Structural Root Terminator as a means to directly cut roots and prevent virus transfer to the seed potato crop. This rapid destruction will eliminate the foliage, preventing further exposure of the seed potato crop to infection by virus vectors. As well, this method of topkill should allow producers to optimize the volume of seed potatoes in their target size range.

Determining Effective Filter Strip and Buffer Zone Composition

Applicant:	Prince Edward Island Potato Board and the Bedeque Bay Environmental Management Association
Project Term:	3 years
Project Cost:	$115,500
Maximum ARIF Contribution:	$ 72,000

In recent years, the importance of sustainable agriculture practices for Prince Edward Island has been well recognized. Soil erosion and resulting agricultural runoff are major concerns for the Island's environmental as well as economic well-being. Buffer zone legislation in Prince Edward Island requires a minimum 10 m buffer zone for all row crops bordering waterways. However, there has been inadequate research completed into the most effective composition of grass filter strips and riparian buffer zones.

This project will undertake to collect baseline data with regard to the agronomic performance of various species within filter strips. As well, the rate of sedimentation and resulting carrying capacity of the filter strips will be determined. The overall objective will be to determine the most effective species to reduce levels of erosion and runoff. The influence of various conditions such as slope, type, time of year, buffer strip width, etc. will be incorporated into the assessments.

Three Row Bed Planting for Potatoes

Applicant:	Prince Edward Island Potato Producers Association
Project Term:	1 year
Project Cost:	$28,730
Maximum ARIF Contribution:	$19,500

Increasing plant densities can increase potato yields but tends to decrease tuber size. Traditionally, the potato cultivar Russet burbank is grown using conventional row spacing of 91 cm and within plant spacing of 40 cm. Resulting plant densities are approximately 27,070 plants per hectare. The Northam Potato System™ plants a third row between the two existing rows. A bed former is then used to cover these potatoes. Using the system, plant densities increase to greater than 40,000 plants per hectare. Increasing plant density results in increased production efficiency regarding land use, soil preparation, pesticide application and harvest time.

This project will evaluate the total and marketable yields of potatoes grown under the Northam system. Factors in the study include an evaluation of specific gravity, off-type, size, sun burn, fry colour and yields. As well, assessments will be made of the effect on weed control, plant vigour and late blight epidemiology.

Potato Viruses in PEI: insect vectors and the rate of virus translocation to tubers

Applicant:	Prince Edward Island Department of Agriculture and Forestry
Project Term:	3 years
Project Cost:	$370,125
Maximum ARIF Contribution:	$60,000 * Funding for years 2 and 3 conditional upon availability of funds from ARIF Inc.

In recent years, potato growers have had increasing problems ensuring the continuity of supply of low virus seed lots. Viruses which have become of major concern to growers include potato virus Yc (PVYo) and potato leafroll virus (PLRV). Correct diagnosis of virus diseases in the field is essential if new disease reduction strategies are to be developed. The use of a laboratory-based test over the past two years has greatly improved the accurate detection of plant viruses. However, effective virus management also requires an understanding of epidemiology, and the relationship of potato cultivars and specific cultural practices to disease development.

This proposal will address the associated problems of potato virus spread, host infection and movement of the virus through the plant. Studies will include: 1) a determination of the ability of various aphid and associated insect species to transmit different potato viruses, 2) validating the triggers for the killdown dates currently linked to the Aphid Alert Warning Program, and 3) an examination of the relationship between late season infection, killdown and the rate of translocation and partitioning of virus into developing tubers.

An Investigation of Factors Associated with Milk Off-Flavor in PEI Dairy Herds - Phase 2

Applicant:	Prince Edward Island Dairy Producers Association
Project Term:	2 years
Project Cost:	$237,000
Maximum ARIF Contribution:	$60,000

The incidence of off-flavor on PEI has been increasing in the last two years. The problem is major for producers, dairy personnel and processors. While there appear to be seasonal patterns, causal factors are not readily identified.

This study is a two-year project which will evaluate the factors involved in off-flavor problems. To date, the problem seems to be associated to feeding management and components of the feed. The funding will assist in carrying out the detailed analytical work needed to establish the exact cause of the problem. Project design includes the collection and analysis of pertinent data from dairy farms, the development of practical management strategies and communication of the information to producers.

COMPLETED PROJECTS:

The following projects were completed during the past year:

- *Tarnished Plant Bug as a Vector of PVY and PVX (Topline Crop Services)*
- *Crop Nutrition of Carrots and Lettuce (Prince Edward Island Horticultural Association)*
- *Improved Quality of Storage Carrots (Prince Edward Island Horticultural Association)*
- *Survey of Selenium Status of Dairy Herds on PEI (Prince Edward Island Dairy Producers Association), and*
- *Variety and Production Research on Onions Produced by Direct Seeding (Joe McCabe).*

In summary, I wish to thank the Board of Directors for their continued commitment to the Corporation and their enduring efforts toward advances in applied and developmental research.

Respectively submitted,

Alan C. Miller, Chairperson
Agricultural Research Investment Fund Inc.

AUDITOR GENERAL

CHARLOTTETOWN

PRINCE EDWARD ISLAND

PEI AGRICULTURAL RESEARCH INVESTMENT FUND INC.

FINANCIAL STATEMENTS

MARCH 31, 2001

AUDITOR GENERAL

CHARLOTTETOWN

PRINCE EDWARD ISLAND

AUDITOR'S REPORT

To the Board of Directors of the
PEI Agricultural Research Investment Fund Inc.

I have audited the balance sheet of the PEI Agricultural Research Investment Fund Inc. as at March 31, 2001 and the statement of revenue, expenditures and surplus, and cash flows for the year then ended. These financial statements are the responsibility of the corporation's management. My responsibility is to express an opinion on these financial statements based on my audit.

I conducted my audit in accordance with Canadian generally accepted auditing standards. Those standards require that I plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In my opinion, these financial statements present fairly, in all material respects, the financial position of the corporation as at March 31, 2001 and the results of its operations and its cash flows for the year then ended in accordance with Canadian generally accepted accounting principles.

J. Wayne Murphy, FCA
Auditor General

Charlottetown, Prince Edward Island
June 25, 2001

STATEMENT 1

PEI AGRICULTURAL RESEARCH INVESTMENT FUND INC.

BALANCE SHEET

AS AT MARCH 31, 2001

ASSETS

	2001	2000
Cash	$ 53,243	$ 65,180
Provincial Deposit Receipt	758,936	1,014,093
Accounts Receivable		
- Province of Prince Edward Island	600,000	200,000
- General	828	472
	$1,413,007	$1,279,745

LIABILITY AND SHAREHOLDER'S EQUITY

Accrued Liability - Note 2	$ 252,126	$ 124,585
Share Capital - Note 3	100	100
Surplus - Statement 2	1,160,781	1,155,060
	$1,413,007	$1,279,745

(The accompanying notes are an integral part of these financial statements.)

SIGNED ON BEHALF OF THE BOARD:

STATEMENT 2

PEI AGRICULTURAL RESEARCH INVESTMENT FUND INC.

STATEMENT OF REVENUE, EXPENDITURES AND SURPLUS

FOR THE YEAR ENDED MARCH 31, 2001

	2001	2000
Revenue		
Provincial Grant	$ 600,000	$ 300,000
Interest Revenue	49,732	53,973
	649,732	353,973
Expenditures		
Administration	1,601	1,440
Research Projects - Note 2	642,410	355,963
	644,011	357,403
Net Income (Loss) for the Year	5,721	(3,430)
Surplus, Beginning of Year	1,155,060	1,158,490
Surplus, End of Year	$1,160,781	$1,155,060

(The accompanying notes are an integral part of these financial statements.)

STATEMENT 3

PEI AGRICULTURAL RESEARCH INVESTMENT FUND INC.

STATEMENT OF CASH FLOWS

AS AT MARCH 31, 2001

	2001	2000
CASH FLOW FROM OPERATING ACTIVITIES		
Receipts from Province	$ 200,000	$ 200,000
Payments to Projects	(515,246)	(298,617)
Payments to Suppliers and Board Members	(1,601)	(1,695)
Interest Received	49,753	54,135
NET DECREASE IN CASH AND CASH EQUIVALENTS	(267,094)	(46,177)
CASH AND CASH EQUIVALENTS - Note 5		
Balance, Beginning of Year	1,079,273	1,125,450
Balance, End of Year	$ 812,179	$1,079,273

(The accompanying notes are an integral part of these financial statements.)

PEI AGRICULTURAL RESEARCH INVESTMENT FUND INC.

NOTES TO FINANCIAL STATEMENTS

MARCH 31, 2001

1. Operations

The PEI Agricultural Research Investment Fund Inc. was incorporated on March 31, 1995 under Part 1 of the Companies Act. The main objective of the corporation is to provide funds for agricultural research in the Province.

2. Future Commitments

In addition to the accrued liability, the corporation has approved 16 research projects providing for future commitments of:

April 1, 2001 to March 31, 2002	$500,014
April 1, 2002 to March 31, 2003	185,230
April 1, 2003 to March 31, 2004	84,000
	$769,244

3. Share Capital

The corporation has authorized 5,000 common shares with a $1 par value. As at March 31, 2001 common shares were issued and outstanding for $100. The Government of Prince Edward Island, as represented by the Minister of Agriculture and Forestry, is the sole shareholder.

4. Provincial Administrative Expenses

Costs incurred by the Department of Agriculture and Forestry on behalf of the PEI Agricultural Research Investment Fund Inc. in administrating this fund are not reflected in the financial statements. These costs include salary and related employee benefits, office accommodations, and miscellaneous administrative expenses.

5. Cash and Cash Equivalents

Cash and cash equivalents consist of cash on hand and balances with banks, and short-term investments. Cash and cash equivalents included in the cash flow statement comprise the following balance sheet amounts:

	2001	2000
Cash on hand and balances with bank	$ 53,243	$ 65,180
Provincial deposit receipt	758,936	1,014,093
Total cash and cash equivalents	$812,179	$1,079,273